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Success Story

C-130 Aircraft Engine Lubricant Foaming Problem Solved

Payoff

The quick solution to a T56 engine lubricant foaming problem eliminated excessive maintenance requirements that had affected the operational readiness of C-130 aircraft. This could not have been accomplished without the fundamental understanding of the cause of foaming and a close working relationship between Aero Propulsion and Power Directorate engineers, logistics center supply activities and the T56 engineering team.

Accomplishment

The Aero Propulsion and Power Directorate, working closely with San Antonio Air Logistics Center's (SA-ALC) Product Engineering Branch and T56 engineering team, solved a foaming problem in T56 engines on C-130 aircraft. THis problem was adversely affecting C-130 operational readiness due to excessive maintenance requirements. Based on data generated by the Directorate, SA-ALC notified overhaul and field sites to cease use of a non-specification spline lubricant.

Background

Incidents of lubricant foaming in T56 engine were adversely impacting Air Force operations at Savannah Air National Guard Base, Charlotte Air National Guard Base and Little Rock Air National Guard Base, as well as the Kodiak Air Station. These incidents resulted in additional engine maintenance requirements that included flushing of lubricant systems and numerous replacements of accessory and reduction gearboxes. To help identify and solve this problem, the Directorate's Fuels and Lubrication Division and SA-ALC engineers developed a coordinated approach to investigate the problem. Field activities were asked to provide samples of materials (especially silicones) used in mounting the gearboxes on the engines. Mare than 40 foam tests were performed on the samples, resulting in the identification of one silicone-based, anti-seize spline lubricant that caused gross lubricant foaming. Chromatography and infrared spectroscopy tests provided evidence that the lubricant did not meet specification base stock requirements. Analysis determined that a non-specification silicone, rather than the one required by the specification, was used as the base stock. The non-specification spline lubricant generated foam in synthetic engine lubricants 2000 times the rate of the correctly formulated product.

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Additional information

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